S))Q

YES NO N/A

CASE NUMBER:_____ LAB:_____
SITE:_____

1.0 Data Completeness and Deliverables

1.1 Have any missing deliverables been received and added to the data package? [ ] ___ ___

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

1.2 Was SAS-request included with package? [ ] ___ ___

If no, a SAS-request can be retrieved from RSCC.

2.0 Cover Letter SDG Narrative

2.1 Is the Narrative or Cover Letter Present? [ ] ___ ___

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? [ ] ___ ___

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any Low Concentration Volatile analyses, Part B for any Low Concentration Semivolatile analyses and Part C for Low Concentration Pesticide/Aroclors.

Does this package contain:

Low Concentration Volatile Data? ___ ___

Low Concentration Semivolatile Data? ___ ___

Low Concentration Pesticide/Aroclor data? ___ ___

Action: Complete corresponding parts of checklist.

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YES NO N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are Traffic Report Forms present for all samples? [ ] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ [ ] ___

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and non-detects using professional judgement.

1.3 Does Lab narrative contain a list of pH determinations for all samples? [ ] ___ ___

ACTION: If Lab narrative does not contain a list of sample pH determinations, contact the lab for explanation/resubmittals.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ [ ] ___

If unpreserved, samples maintained at 4°C and are to be analyzed for aromatic hydrocarbons must be analyzed within 7 days of collection. If preserved with HCl (pH<2) and stored at 4°C, then samples must

S))Q

YES NO N/A

be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or not samples were preserved.

Table of Holding Time Violations

Sample ID	Preserved?	Date Sampled	(See Traffic Report) Date Lab Received	Date Analyzed
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R). If holding times are exceeded by more than 28 days, all non-detect data are unusable (R).

3.0 Surrogate Recovery (Form II LCV)

3.1 Are the VOA Surrogate Recovery Summaries (Form II LCV) present? [ ] ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

3.2 Were outliers marked correctly with an asterisk? [ ] ___ ___

ACTION: Circle all outliers in red.

S))Q

YES NO N/A

3.3 Was the surrogate (p-bromofluorobenzene) recovery outside of contract specifications for any sample or method blank? ___ [ ] ___

If yes, were samples re-analyzed? [ ] ___ ___

Were method blanks re-analyzed? [ ] ___ ___

ACTION: If bromofluorobenzene recovery is >10%, but fails to meet SOW specifications:

1. All positive results are qualified as estimated (J).

2. Flag all non-detects as estimated detection limits ("UJ") where recovery is less than the lower acceptance limit.

3. If surrogate recovery is above allowable levels, do not qualify non-detects.

If surrogate recovery is < 10% :

1. Flag all positive results as estimated ("J").

2. Flag all non-detects as unusable ("R").

Professional judgement should be used to qualify data that only have the method blank's surrogate recovery out of specification in both original and reanalyses. Check the internal standard areas.

3.4 Are there any transcription/calculation errors between raw data and Form II? ___ [ ] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and note errors in the data assessment.

S))Q

YES NO N/A

4.0 Laboratory Control Sample (Form III LCV)

4.1 Is the Laboratory Control Sample Recovery Form (Form III LCV) present? [ ] ___ ___

4.2 Was the Laboratory Control Sample (LCS) analyzed at the required frequency (once per SDG or every 20 samples, whichever is more frequent) for the Low Concentration VOA method? [ ] ___ ___

ACTION: If any LCS data are missing, take the action specified in 3.2 above.

4.3 How many VOA LCS recoveries are outside QC limits of 60-140%?

Low Conc. Water

_____ out of 12

ACTION: If the LCS recovery is greater than 140%, positive results should be flagged "J" for the affected compound.

If the mass spectral criteria are met but the LCS recovery is less than 60%, then the associated detected target compounds should be flagged "J". Associated non-detected target compounds should be flagged "R".

If 25 % of the analyte recoveries are below QC-limits qualify all associated positive sample data as "J" and non-detects "R".

If two or more analytes show recoveries of < 10% all associated positive sample data as "J" and non-detects "R".

It should be noted for TPO action if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails to generate acceptable LCS recoveries.

S))Q

YES NO N/A

5.0 Method Blanks (Form IV-LCV)

5.1 Is the Method Blank Summary (Form IV LCV) present? [ ] ___ ___

5.2 Frequency of Analysis:

For the analysis of Low Concentration VOA TCL compounds, has a method blank been analyzed for each SDG or every 20 samples, whichever is more frequent? [ ] ___ ___

5.3 Has a VOA method blank been analyzed at least once every twelve hours for each GC/MS system used? [ ] ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject (R) all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

5.4 Chromatography: review the method blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Low Concentration VOAs? [ ] ___ ___

ACTION: Use professional judgement to determine the effect on the data.

5.0.1 Storage Blank

5.0.1a Has a storage blank been analyzed at the required frequency (once per SDG) for VOAs? [ ] ___ ___

5.0.1b Chromatography: Compare the storage blank raw data with the associated method blank data in order to determine if the contamination is also present

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YES NO N/A

in the method blank.

ACTION: If the storage blank contains target compounds at a concentration greater than the CRQL, positive results for that compound(s) should be flagged "J". If gross contamination occurred positive sample results may require rejection for that compound.

5.0.1c Is the chromatographic performance (baseline stability) for the storage blank acceptable for Low Conc. VOAs? [ ] ___ ___

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Has an instrument blank been analyzed following a sample analysis which contained an analyte(s) at high concentration(s). ___ [ ] ___

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Instrument cross contamination should be noted for TPO action if an effect on the data is suspected.

6.2 Do any method/storage blanks have positive results (TCL and/or TIC) for Low Conc. VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ [ ] ___

6.3 Do any field/trip/rinse blanks have positive Low Conc. VOA results (TCL and/or TIC)? ___ [ ] ___

S))Q

YES NO N/A

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Field blanks & trip blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable (R).

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & <10x blank value	Sample conc > CRQL & >10x blank value value
Methylene Chloride Acetone 2-Butanone	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5x blank value
Other Contam-inants	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

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YES NO N/A

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V-LCV)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V-LCV) present for Bromofluorobenzene (BFB)? [ ] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [ ] ___ ___

7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument? [ ] ___ ___

ACTION: List date, time, instrument ID, and sample analysis for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

S))Q

YES NO N/A

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95? [ ] ___ ___

ACTION: If mass assignment is in error, qualify all associated data as unusable (R).

7.5 Have the ion abundance criteria been met for each instrument used? [ ] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ [ ] ___

7.7 Have the appropriate number of significant figures (two) been reported? [ ] ___ ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.

7.8 Is the spectrum of the mass calibration compound acceptable? [ ] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (Form I LCV)

8.1 Are the Organic Analysis Data Sheets (Form I LCV) present with required header information on each page, for each of the following:

S))Q

		YES	NO	N/A
a.	Samples and/or fractions as appropriate?	[ ]	___	___
b.	Laboratory Control Samples?	[ ]	___	___
c.	Blanks?	[ ]	___	___

8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following:

a.	Samples and/or fractions as appropriate?	[ ]	___	___
b.	Laboratory Control Samples?	[ ]	___	___
c.	Blanks?	[ ]	___	___

ACTION: If any data are missing, take action specified in 3.2 above.

8.3	Are the response factors shown in the Quant Report?	[ ]	___	___

8.4 Is chromatographic performance acceptable with respect to:

	Baseline stability?	[ ]	___	___
	Resolution?	[ ]	___	___
	Peak shape?	[ ]	___	___
	Full-scale graph (attenuation)?	[ ]	___	___
	Other: _____	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for

S))Q

	YES	NO	N/A
each sample?	[ ]	___	___

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If lab does not generate their own standard spectra, make note in data assessment - "Contract Problems/Non-Compliance".

8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[ ]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 25% also present in the sample mass spectrum?	[ ]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[ ]	___	___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R), flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in the SOW page VOA D-32, section 21.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

9.0 Tentatively Identified Compounds (TIC)

9.1 Are all Tentatively Identified Compound Forms (Form I LCV-TIC) present? Do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[ ]	___	___

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YES NO N/A

9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

a. Samples and/or fractions as appropriate? [ ] ___ ___

b. Blanks? [ ] ___ ___

ACTION: If any TIC data are missing, take action specified in 3.2 above.
ACTION: Add "JN" qualifier if missing.

9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethyl-benzene is xylene- a VOA TCL analyte - and should not be reported as a TIC)? ___ [ ] ___

ACTION: Flag with "R" any TCL compound listed as a TIC.

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 25% also present in the sample mass spectrum? [ ] ___ ___

9.5 Do TIC and "best match" standard relative ion intensities agree within 20%? [ ] ___ ___

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change its identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (i.e. Common Lab Contaminants: CO_2 (M/E 44), Siloxanes (M/E 73) Hexane, Aldol Condensation Products, Solvent Preservatives, and related by products -

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YES NO N/A

see Functional Guidelines for more guidance).

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? ___ [ ] ___

10.2 Are the CRQLs adjusted to reflect sample dilutions? [ ] ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.

11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration? [ ] ___ ___

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

S))Q

YES NO N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI LCV) present and complete for the volatile fraction at concentrations of 1, 2, 5, 10, and 25 ug/l? [ ] ___ ___

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Are response factors stable for VOA's over the concentration range of the calibration (%Relative Standard Deviation (%RSD) <30.0%)? [ ] ___ ___

ACTION: Circle all outliers in red.

NOTE: Although 12 Low Conc. VOA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

ACTION: If %RSD > 30.0%, qualify associated positive results for that analyte "J" and non-detects using professional judgement. When RSD > 90%, flag all non-detects for that analyte R (unusable).

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria.

12.3 Are the $\overline{\text{RRF}}$s above 0.05? [ ] ___ ___

Action: Circle all outliers in red.

Action: If any $\overline{\text{RRF}}$ values are < 0.05, qualify associated non-detects (R) and flag associated positive data as estimated (J).

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YES NO N/A

12.4 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ [ ] ___

13.0 GC/MS Continuing Calibration (Form VII LCV)

13.1 Are the Continuing Calibration Forms (Form VII LCV) present and complete for the volatile fraction? [ ] ___ ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? [ ] ___ ___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation/ resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any volatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the ± 30% criteria? ___ [ ] ___

ACTION: Circle all outliers in red.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated "J". When % D is above 90%, reject all non-detects for that analyte (R) as unusable.

13.4 Do any volatile compounds have a RRF <0.05? [ ] ___ ___

S))Q

YES NO N/A

ACTION: Circle all outliers in red.

ACTION: If the RRF <0.05, qualify associated non-detects as unusable (R) and associated positive values as estimated "J".

13.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or %difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [ ] ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standard (Form VIII LCV)

14.1 Are the internal standard areas (Form VIII LCV) of every sample and blank within the upper and lower limits (±40%) for each continuing calibration? [ ] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Non-detects associated with IS area counts > 40% should not be qualified.

S))Q

YES NO N/A

3. If IS area is below the lower limit (< 40%), qualify all associated non-detects (U values) "J". If extremely low area counts are reported, (< 20%) or if performance exhibits a major, abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 20 seconds of the associated calibration standard? [ ] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low Conc. VOA analysis? [ ] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

S))Q

YES NO N/A

PART B: BNA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [ ] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [ ] ___

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Continuous liquid-liquid extraction of samples for BNA analysis must be started within seven days of the date of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations

Sample ID	Date Sampled	(See Traffic Report) Date Lab Received	Date Extracted	Date Analyzed

S))Q

YES NO N/A

ACTION: If technical holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results should be qualified "J", but the reviewer may determine that non-detect data are unusable ("R"). If holding times are exceeded by more than 28 days, all non-detect data are unusable (R).

3.0 Surrogate Recovery (Form II LCSV)

3.1 Are the Low Conc. Semivolatile Surrogate Recovery Summaries (Form II LCSV) present? [ ] ___ ___

3.2 Are all the semivolatile samples in each SDG listed on the proper Surrogate Recovery Form(s)? [ ] ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

3.3 Were outliers marked correctly with an asterisk? [ ] ___ ___

ACTION: Circle all outliers in red.

3.4 Were two or more base-neutral OR acid surrogate recoveries out of specification for any sample or method blank? ___ [ ] ___

If yes, were samples reanalyzed? [ ] ___ ___

Were method blanks reanalyzed? [ ] ___ ___

ACTION: If all BNA surrogate recoveries are >10% but two within the base-neutral or acid

S))Q

YES NO N/A

fraction do not meet SOW specifications <u>for the affected fraction only (i.e. base-neutral or acid compounds)</u>:

1. Flag all positive results as estimated ("J").

2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.

3. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

If any base-neutral <u>or</u> acid surrogate has a recovery of <10%:

1. Positive results for the fraction with <10% surrogate recovery are qualified with "J".

2. Non-detects for that fraction should be qualified as unusable (R) .

Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. Check the internal standard areas.

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ [ ] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

4.0 <u>Laboratory Control Sample (Form III LCSV)</u>

4.1 Is the Semivolatile Laboratory Control Sample (LCS) Recovery Form (Form III LCSV) present? [ ] ___ ___

S))Q

YES NO N/A

4.2 Was the LCS analyzed at the required frequency (once per SDG, or every 20 samples)? [ ] ___ ___

ACTION: If any LCS data are missing, take the action specified in 3.2 above.

4.3 How many Low Conc. Semivolatile LCS recoveries are outside QC limits?

Low Conc. Water

_____ out of 15

ACTION: If the LCS recovery is greater than the QC-limit, provided on Form III LCSV (140%), positive results should be flagged "J" for the affected compound(s).

If the mass spectral criteria are met but the LCS recovery is less than 60%, then the associated detected target compounds should be flagged "J". Associated non-detected target compounds should be flagged "R".

If 25 % of the analyte recoveries are below QC-limits qualify all associated positive sample data as "J" and non-detects "R".

If two or more analytes show recoveries of < 10% all associated positive sample data as "J" and non-detects "R".

It should be noted for TPO action if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails to generate acceptable LCS recoveries.

5.0 Blanks (Form IV LCSV)

5.1 Is the Method Blank Summary Form (Form IV LCSV) present? [ ] ___ ___

5.2 Frequency of Analysis:

For the analysis of Low Conc. Semivolatile

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YES NO N/A

TCL compounds, has a method blank been reported per 20 samples and for each extraction batch? [ ] ___ ___

5.3 Has a Low Conc. Semivolatile method blank been analyzed for each GC/MS system used? [ ] ___ ___
(See SOW page SV D-34, section 26.2.2)

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject (R) all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.

Is the chromatographic performance (baseline stability) for each instrument acceptable for BNAs? [ ] ___ ___

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

Note: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method blanks have positive results (TCL and/or TIC) for Low Conc. semivolatiles? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ [ ] ___

6.2 Do any field/rinse blanks have positive Low Conc. Semivolatile results (TCL and/or TIC)? ___ [ ] ___

S))Q

YES NO N/A

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

Note: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, spectral, instrument performance or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If gross contamination exists, all data in the associated samples should be qualified as unusable (R).

Sample conc > CRQL but < 10x blank	Sample conc <CRQL & is < 10x blank value	Sample conc > CRQL value & > 10x blank
Common Phthalate Esters		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed
Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & >5 blank value
Other Contaminants Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the

S))Q

YES NO N/A

concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V LCSV)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V LCSV) present for Decafluorotriphenylphosphine (DFTPP)? [ ] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift? [ ] ___ ___

7.3 Has an instrument performance check solution been analyzed for every twelve hours of sample analysis per instrument? [ ] ___ ___

ACTION: List date, time, instrument ID and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS
_____	_____	_____	_____
_____	_____	_____	_____

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

S))Q

	YES	NO	N/A
7.4 Have the ion abundances been normalized to m/z 198?	[ ]	___	___
ACTION: If mass assignment is in error, flag all associated sample data as unusable (R).			
7.5 Have the ion abundance criteria been met for each instrument used?	[ ]	___	___
ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.			
7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)	___	[ ]	___
7.7 Have the appropriate number of significant figures (two) been reported?	[ ]	___	___
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
7.8 Is the spectrum of the mass calibration compound acceptable?	[ ]	___	___
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			

8.0 Target Compound List (TCL) Analytes (Form I LCSV)

8.1 Are the Organic Analysis Data Sheets (Form I LCSV-1,2) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	___
b. Laboratory Control Sample(s)?	[ ]	___	___

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	YES	NO	N/A
c. Blanks?	[ ]	___	___
8.2 Are the Low Conc. Semivolatile Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	___
b. Laboratory Control Sample(s)?	[ ]	___	___
c. Blanks	[ ]	___	___

ACTION: If any data are missing, take action specified in 3.2 above.

8.3 Are the response factors shown in the Quant Report?	[ ]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability?	[ ]	___	___
Resolution?	[ ]	___	___
Peak shape?	[ ]	___	___
Full-scale graph (attenuation)?	[ ]	___	___
Other:_____	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5 Are the lab-generated standard mass spectra of identified Low Conc. Semivolatile compounds present for each sample?	[ ]	___	___

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If lab does not generate their own standard

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YES NO N/A

spectra, make note in "Contract Problems/ Non-Compliance". If spectra are missing, reject all positive data.

8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration? [ ] ___ ___

8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 25% also present in the sample mass spectrum? [ ] ___ ___

8.8 Do sample and standard relative ion intensities agree within 20%? [ ] ___ ___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R), flagged "N" (Presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in SOW page SV D-27, section 20.

ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.

9.0 Tentatively Identified Compounds (TIC)

9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier? [ ] ___ ___

9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

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	YES	NO	N/A
a. Samples and/or fractions as appropriate?	[ ]	___	___
b. Blanks?	[ ]	___	___

ACTION: If any TIC data are missing, take action specified in 3.2 above.

ACTION: Add "JN" qualifier if missing.

9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene a VOA TCL and should not be reported as a TIC)?	___	[ ]	___

ACTION: Flag with "R" any TCL compound listed as a TIC.

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 25% also present in the sample mass spectrum?	[ ]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[ ]	___	___

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.

Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R).

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Verify that the			

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YES NO N/A

correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? ___ [ ] ___

10.2 Are the CRQLs adjusted to reflect sample dilutions? [ ] ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and it's associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red " X" across the entire page of all Form I's that should not be used, including any in the summary package.

11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant, Reports) present for initial and continuing calibration? [ ] ___ ___

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

12.0 GC/MS Initial Calibration (Form VI LCSV)

12.1 Are the Initial Calibration Forms (Form VI LCSV-1,2) present and complete for the Low Conc. Semivolatile fraction at concentrations of 5, 10, 20, 50 and 80 ug/l? [ ] ___ ___

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YES NO N/A

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Are response factors stable for semivolatiles over the concentration range of the calibration (% Relative standard deviation (%RSD) < 30.0%)? [ ] ___ ___

ACTION: Circle all outliers in red.

NOTE: Although 22 Low Conc. Semivolatile compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

ACTION: If the % RSD is > 30.0%, qualify positive results for that analyte "J" and non-detects using professional judgement. When RSD > 90%, flag all non-detect results for that analyte R (unusable).

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

12.3 Are all Semivolatile compound $\overline{\text{RRF}}$s > 0.05? [ ] ___ ___

ACTION: Circle all outliers in red.

ACTION: If any $\overline{\text{RRF}}$ < 0.05:

1. "R" all non-detects.

2. "J" all positive results.

12.4 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or % RSD? (Check at least two values but if errors are found, check more.) ___ [ ] ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary

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YES NO N/A

corrections and note errors in data assessments.

13.0 GC/MS Continuing Calibration (Form VII LCSV)

13.1 Are the Continuing Calibration Forms (Form VII LCSV-1,2) present and complete for the semivolatile fraction? [ ] ___ ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? [ ] ___ ___

ACTION: List below all sample analyses that were not within twelve hours of a continuing calibration analysis for each instrument used.

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation/ resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any semivolatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the ± 25.0% criteria? ___ [ ] ___

ACTION: Circle all outliers in red.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When %D is > 90%, reject all non-detects for that analyte (R) unusable.

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YES NO N/A

13.4 Do any semivolatile compounds have a RRF <0.05? ___ [ ] ___

ACTION: Circle all outliers in red.

ACTION: If RRF <0.05, qualify as unusable (R) associated non-detects and "J" associated positive values.

13.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or % difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more). ___ [ ] ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document the effect in data assessments.

14.0 Internal Standards (Form VIII LCSV)

14.1 Are the Internal Standard Area and RT Summary Forms (Form VIII LCSV-1,2) present and complete for the semivolatile fraction? [ ] ___ ___

14.2 Are the internal standard areas for every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration? [ ] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

ACTION: 1. If the internal standard area count

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YES NO N/A

is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard.

2. Non-detects associated with IS areas > 100% should not be qualified.

3. If the IS area is below the lower limit (<50%), qualify all associated non-detects (U-values) "J". If extremely low area counts are reported (<25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable (R).

14.3 Are the retention times of the internal standards within 20 seconds of the associated calibration standard? [ ] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low Conc. Semivolatile analysis? [ ] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

S))Q

YES NO N/A

PART C: PESTICIDE/AROCLOR ANALYSIS

1.0 Traffic Reports and Laboratory Narrative

1.1 Are Traffic Report Forms present for all samples? [ ] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or SDG Narrative indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data? ___ [ ] ___

ACTION: If samples were not iced upon receipt at the laboratory, flag all positive results "J" and all non-detects "UJ".

1.3 Were the sample pHs measured and recorded ? If the sample had to be neutralized, then the initial and final pH must be noted in SDG narrative (Pest-D29, LCW SOW).

ACTION: Check extraction log for pH, if adjustment was needed, it should be noted in narrative. If information is not available, ask lab for information\resubmittals.

2.0 Holding Times

2.1 Have any PEST/PCB technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Continuous liquid-liquid extraction of samples for Pesticide/Aroclor analysis must be started within 7 days of collection.
Extracts must be analyzed within 40 days of extraction.

ACTION: If technical holding times are exceeded,

S))Q

YES NO N/A

flag all positive results as estimated (J) and sample quantitation limits (UJ) and document in the narrative that holding times were exceeded.

If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all the data should at least be qualified "J", but the reviewer may determine that non-detects are unusable (R).

3.0 Surrogate Recovery (Form II LCP)

3.1 Are the Pest/Aroclor Surrogate Recovery Summaries (Form II LCP) present? [ ] ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

3.2 Were outliers marked correctly with an asterisk? [ ] ___ ___

ACTION: Circle all outliers in red.

3.3 Were surrogate recoveries of TCX or DCB outside of the contract specification for any sample or blank? (60-150%)? ___ [ ] ___

ACTION: No qualification is done if surrogates are diluted out. If recovery for both surrogates is below the contract limit, but above 10%, flag all results for that sample 'J". If recovery is < 10% for either surrogate, qualify positive results 'J" and flag non-detects "R". If recovery is above the contract advisory limits for both surrogates qualify positive values "J".

S))Q

YES NO N/A

3.4 Were surrogate retention times (RT) within the windows established during the initial 3-point analysis of Individual Standard Mixture A? [ ] ___ ___

ACTION: If the RT limits are not met, the analysis may be qualified unusable (R) for that sample on the basis of professional judgement.

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ [ ] ___

ACTION: If large errors exist, call lab for explanation/resubmittal. Make any necessary corrections and document effect in data assessments.

4.0 Laboratory Control Sample (LCS)

4.1 Is the Laboratory Control Sample (LCS) Recovery Form (Form III) present? [ ] ___ ___

4.2 Was the LCS analyzed at the required frequency (once per SDG, or every 20 samples) for the Low Conc. Pest/Aroclor method? [ ] ___ ___

ACTION: If any LCS data are missing, take the action specified in 3.1 above.

4.3 How many PEST spike recoveries are outside QC limits?

Water

_____ out of 14 Total

ACTION: Check calculations, surrogates, LCS solutions and instrument performance.
ACTION: If the LCS recovery is greater than the QC-limit, provided on Form III LCP (140%), positive results should be flagged "J" for the affected compound.

ACTION: If LCS recovery is less than 60%, then the associated detected target compounds should be

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YES NO N/A

flagged "J". Associated non-detected target compounds should be flagged "R".

ACTION: If 25 % of the analyte recoveries are below QC-limits qualify all associated positive sample data as "J" and non-detects "R".

ACTION: If two or more analytes show recoveries of < 10% all associated positive sample data as "J" and non-detects "R".

It should be noted for TPO action if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails to generate acceptable LCS recoveries. The affected samples are those prepared and analyzed in SDG that correspond to LCS.

5.0 Blanks (Form IV LCP)

5.1 Is the Method Blank Summary (Form IV LCP) present? [ ] ___ ___

5.2 Frequency of Analysis: For the analysis of Pesticide/Aroclor TCL compounds, has a method blank been analyzed concurrently for each SDG or every 20 samples or each extraction batch, whichever is more frequent? [ ] ___ ___

ACTION: If any blank data are missing, take the action specified above in 3.1. If blank data is not available, reject (R) all associated positive data.

However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

S))Q

YES NO N/A

5.3 A separate blank and Form IV should be present if sulfur clean-up was not performed on all of the samples in an extraction batch. Therefore some samples will be listed on two blank summary forms, once under method blank and once under sulfur clean-up blank (PCBLK). Is this additional blank and Form IV present? [ ] ___ ___

ACTION: If sulfur blank data and Form IV are missing, take the action specified in 3.1 above.

5.4 Has a Pest/Aroclor instrument blank been analyzed at the beginning of every 12 hr. period following the initial calibration sequence (minimum contract requirement)? [ ] ___ ___

ACTION: If any blank data are missing, call lab for explanation/resubmittals. If missing deliverables are unavailable, document the effect in data assessments.

5.5 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Pest/Aroclors? [ ] ___ ___

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks", "distilled water blanks" and "drilling water blanks" are validated like any other sample and are not used to qualify the data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/cleanup blanks have positive results for Pest/Aroclors? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ [ ] ___

6.2 Do any field/rinse blanks have positive

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YES NO N/A

Pest/Aroclor results? ___ [ ] ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case or one per day) may be used to qualify data. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL & > 5x blank value
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

NOTE: If gross blank contamination exists, all data in the associated samples should be qualified as unusable (R).

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

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YES NO N/A

7.0 Calibration and GC Performance

7.1 Are the following gas chromatograms and data systems printouts for both columns present for all samples, blanks?

a. peak resolution check	[ ]	___	___
b. performance evaluation mixtures	[ ]	___	___
c. aroclor 1016/1260	[ ]	___	___
d. aroclors 1221, 1232, 1242, 1248, 1254	[ ]	___	___
e. toxaphene	[ ]	___	___
f. low points individual mixtures A & B	[ ]	___	___
g. med points individual mixtures A & B	[ ]	___	___
h. high points individual mixtures A & B	[ ]	___	___
I. instrument blanks	[ ]	___	___

ACTION: If no, take action specified in 3.1 above.

7.2 Are Forms VI LCP-1 - 3 present and complete for each column and each analytical sequence? [ ] ___ ___

ACTION: If no, take action specified in 3.1 above.

7.3 Are there any transcription/calculation errors between raw data and Forms VI? ___ [ ] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.

7.4 Do all standard retention times, including each pesticide in each level of Individual Mixtures A & B, fall within the windows established during the initial calibration analytical sequence? (For Initial Calibration Standards, (Form VI LCP-1 - 3).) [ ] ___ ___

S))Q

YES NO N/A

ACTION: If no, all samples in the entire analytical sequence are potentially affected. Check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised RT window, qualify all positive results and non-detects as unusable (R).

For Aroclors, RT may be outside the RT window, but the Aroclor may still be identified from the individual pattern.

7.5 Are the linearity criteria for the initial analyses of Individual Standards A & B within limits for both columns? (% RSD must be < 20.0% for all analytes except for the 2 surrogates, which must not exceed 30.0 % RSD). See Form VI LCP-2. [ ] ___ ___

ACTION: If no, qualify all associated positive results generated during the entire analytical sequence "J" and all non-detects "UJ". When RSD >90%, flag all non-detect results for that analyte unusable (R).

7.6 Is the resolution between any two adjacent peaks in the Resolution Check Mixture > 60.0% for both columns? (Form VI LCP-4) [ ] ___ ___

ACTION: If no, positive results for compounds that were not adequately resolved should be qualified "J". Use professional judgement to determine if non-detects which elute in areas affected by co-eluting peaks should be qualified "N" as presumptive evidence of presence or unusable (R).

7.7 Is Form VII LCP-4 filled out correctly? Elution order of compounds is different on each column. Was the percent resolution calculated correctly? [ ] ___ ___

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YES NO N/A

7.8 Is Form VII - LCP-1 present and complete for each Performance Evaluation Mixture analyzed during the analytical sequence for both columns? [ ] ___ ___

ACTION: If no, take action as specified in 3.1 above.

7.9 Has the individual % breakdown exceeded 20.0% on either column: ___ [ ] ___

for 4,4' - DDT? ___ [ ] ___

for Endrin? ___ [ ] ___

Has the combined % breakdown for 4,4'- DDT/ Endrin exceeded 30.0% on either column (required in all instances) ___ [ ] ___

ACTION: 1. If any % breakdown has failed the QC criteria in either PEM in steps 2 and 17 in the initial calibration sequence (p. D-25/Pest SOW LCW, 10.55) qualify all sample analyses in the entire analytical sequence as described below.

2. If any % breakdown has failed the QC criteria in a PEM Verification calibration, review data beginning with the samples which followed the last <u>in-control</u> standard until the next acceptable PEM & qualify the data as described below.

a. 4,4'-DDT Breakdown: If 4,4'-DDT breakdown is greater than 20.%:

I. Qualify all positive results for DDT with "J". If DDT was not detected, but DDD and DDE are positive, then qualify the quantitation limit for DDT as unusable (R).

ii. Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity (NJ).

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YES NO N/A

b. Endrin Breakdown: If Endrin breakdown is greater than 20.0%:

I. Qualify all positive results for Endrin with "J". If Endrin was not detected, but Endrin aldehyde and Endrin ketone are positive, then qualify the quantitation limit for Endrin as unusable (R).

ii. Qualify positive results for Endrin ketone and Endrin aldehyde as presumptively present at an approximated quantity (NJ).

c. Combined Breakdown: If the combined 4,4'-DDT and Endrin breakdown is greater than 30.0%:

I. Qualify all positive results for DDT and Endrin with "J". If Endrin was not detected, but Endrin aldehyde and Endrin ketone are positive, then qualify the quantitation limit for Endrin as unusable (R). If DDT was not detected, but DDD and DDE are positive, the qualify the quantitation limit for DDT as unusable (R).

ii. Qualify positive results for Endrin ketone and Endrin aldehyde as presumptively present at an approximated quantity (NJ). Qualify positive results for DDD and/or DDE as presumptively present at an approximated quantity ("NJ").

7.10 Are the relative percent difference (RPD) values for all PEM analytes < 25.0% (Form VII LCP-1)? [ ] ___ ___

ACTION: If no, qualify all associated positive results generated during the analytical sequence "J" and sample quantitation limits "UJ".

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YES NO N/A

NOTE: If the failing PEM is part of the initial calibration, all samples are potentially affected. If the offending standard is a verification calibration, the associated samples are those which followed the last in-control standard until the next passing standard.

7.11 Have all samples been injected within a 12 hr period beginning with the injection of an Instrument Blank? [ ] ___ ___

ACTION: If no, use professional judgement to determine the severity to the effect on data reliability.

7.12 Is Form VII LCP-2 present and complete for each INDA and INDB Verification Calibration analyzed? [ ] ___ ___

ACTION: If no, take action specified in 3.1 above.

7.13 Are there any transcription/calculation errors between raw data and Form VII LCP-2? ___ [ ] ___

ACTION: If large errors exists, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments under "Conclusions".

7.14 Do all standard retention times for each INDA and INDB Verification Calibration fall within the windows established by the initial calibration sequence? [ ] ___ ___

ACTION: If no, beginning with the samples which followed the last in-control standard, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and the surrogates are visible, non-detects are valid. If peaks are present and cannot be identified through pattern recognition or using a revised RT window, qualify all positive results and non-detects as unusable (R).

S))Q

YES NO N/A

7.15 Are RPD values for all verification calibration standard compounds < 25.0%? [ ] ___ ___

ACTION: If the RPD is >25.0% for the compound being quantitated, qualify all associated positive results "J" and non-detects "UJ". The "associated samples" are those which followed the last in-control standard up to the next passing standard containing the analyte which failed the criteria. If the RPD is >90%, flag all non-detects for that analyte R (unusable).

8.0 Analytical Sequence Check (Form VIII LCP)

8.1 Is Form VIII LCP present and complete for each column and each period of analyses? [ ] ___ ___

ACTION: If no, take action specified in 3.1 above.

8.2 Was the proper analytical sequence followed for each initial calibration and subsequent analyses (see LCW SOW Pest pg. D-16 & D-24)? [ ] ___ ___

ACTION: If no, use professional judgement to determine the severity of the effect on the data and qualify it accordingly. Generally, the effect is negligible unless the sequence was grossly altered or the calibration was also out of limits.

8.3 Was a multi-component standard (Toxaphene or Aroclors) analyzed within 72 hours of a detected hit in a sample? [ ] ___ ___

This standard is for identification only. Quantitation for the Aroclors and Toxaphene is from the initial calibration.

ACTION: Take action specified in 8.2 above.

S))Q

YES NO N/A

9.0 Cleanup Efficiency Verification (Form IX LCP)

9.1 Is Form IX LCP present and complete for each lot of Florisil Cartridges used? (Florisil Cleanup is required for all Pest/Aroclor extracts.) [ ] ___ ___

ACTION: If no, take action specified in 3.1 above. If data suggests that Florisil cleanup was not performed, make note in "Contract Problems/Non-Compliance".

9.2 Are all samples listed on the Pesticide Florisil Cartridge Check Form? [ ] ___ ___

ACTION: If no, take action specified in 3.2 above.

9.3 Are percent recoveries (% REC) of the pesticide and surrogate compounds used to check the efficiency of the cleanup procedures within QC limits ?

80-120% for Florisil cartridge check? [ ] ___ ___

ACTION: If %REC of one or two TCL compounds is below < 80%, qualify positive results "J" and quantitation limits "UJ" for these compounds.

If more than two compounds are below 80% recovery qualify all associated data, positive and negative with a "J".

If two or more have recovery of less than 10% all positive data should be qualified "J" and non-detects should be qualified "R". Use professional judgement to qualify positive results if recoveries are greater than the upper limit.

NOTE: Sample data should be evaluated for potential interferences if recovery of 2,4,5-trichloro-phenol was > 5% in the Florisil Cartridge Performance Check analysis. Make note in Contract Problems/Non-Compliance section of reviewer narrative.

S))Q

YES NO N/A

10.0 Pesticide/Aroclor Identification

10.1 Is Form X complete for every sample in which a pesticide or PCB was detected? [ ] ___ ___

ACTION: If no, take action specified in 3.1 above.

10.2 Are there any transcription/calculation errors between raw data and Forms 6D, 6E, 6F, 6G, 7D, 7E, 8D, 9A, 10A, 10B? ___ [ ] ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and note error under "Conclusions".

10.3 Are retention times (RT) of sample compounds within the established RT windows for both analyses? [ ] ___ ___

ACTION: Use professional judgement to qualify positive results. Qualify as unusable (R) all positive results which were not confirmed by second GC column analysis. Also qualify as unusable (R) all positive results not meeting RT window unless associated standard compounds are similarly biased (see Functional Guidelines). The reviewer should use professional judgement to assign an appropriate quantitation limit.

10.4 Is the percent difference (% D) calculated for the positive sample results on the two GC columns < 25.0%? [ ] ___ ___

If %D is >25%, lab must flag reported results with the qualifier P.

ACTION: If the reviewer finds neither column shows interference for the positive hits, the data should be flagged as follows:

% Difference	Qualifier
25-50 %	J
50-90 %	JN
> 90 %	R

S))Q

YES NO N/A

NOTE: The lower of the two values is reported on Form I. If using professional judgement, the reviewer determines that the higher result was more acceptable, the reviewer should replace the value and indicate the reason for the change in the data assessment.

10.5 Check chromatograms for false negatives, especially the multiple peak compounds toxaphene and PCBs. Were there any false negatives? ___ [ ] ___

ACTION: Use professional judgement to decide if the compound should be reported. If the appropriate PCB standards were not analyzed, qualify the data unusable (R).

11.0 Compound Quantitation and Reported Detection Limits

11.1 Are the Organic Analysis Data Sheets (Form 1 Pest) present with required header information for each of the following:

a. samples? [ ] ___ ___

b. Method Blanks? [ ] ___ ___

c. Instrument Blanks? [ ] ___ ___

11.2 Are there any transcription/calculation errors in Form I results? Check at least two positive values. Were any errors found? ___ [ ] ___

NOTE: Single-peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound.

S))Q

YES NO N/A

If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an approximated quantity (NJ). This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has interfered with the evaluation of the second column confirmation.

11.3 Are the CRQLs adjusted to reflect sample dilutions? [ ] ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.

ACTION: Quantitation limits affected by large, off-scale peaks should be qualified as unusable (R). If the interference is on-scale, the reviewer can provide an approximated quantitation limit (UJ) for each affected compound.

S))Q

YES NO N/A

12.0 Chromatogram Quality

12.1 Were baselines stable? [ ] ___ ___

12.2 Were any electropositive displacement (negative peaks) or unusual peaks seen? ___ [ ] ___

NOTE: Pesticide and Aroclor peaks, for standard and sample chromatograms must be visible (>10% of full scale) and well defined. If not the lab must be asked to resubmit expanded chromatograms. However the surrogate peaks should be always within the 100% range.

ACTION: Address comments under "System Performance" of data assessment

13.0 Field Duplicates

13.1 Were any field duplicates submitted for Pest/Aroclor analysis? [ ] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.